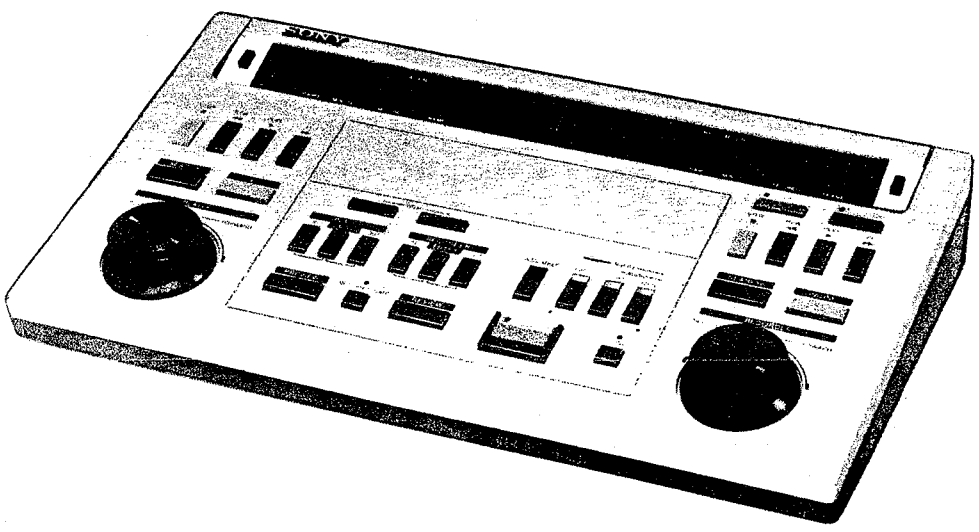
SONY®

AUTOMATIC EDITING CONTROL UNIT

RM-440

OPERATING INSTRUCTIONS Page 2

Before operating the unit, please read this manual thoroughly, and retain it for future reference.



English

The RM-440 is a small-size, light-weight micro-processor based unit, which is programmed to perform many kinds of automatic functions. When tape-to-tape editing using two machines such as the SLO-383 Videocassette Recorder, the maximum ability of the RM-440 will be realized.

OWNER'S RECORD

The model and serial numbers are located at the rear.
Record these numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. RM-440 Serial No. _____

WARNING

- To prevent fire or shock hazard, do not expose the unit to rain or moisture.
- To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Warning—This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.
Important—To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.
"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."
—or—
"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."
—or equivalent.

PRECAUTIONS

- Good air circulation is essential to prevent internal heat build-up within the unit. Place the unit in a location having adequate air circulation.
- Keep the unit away from strong magnetic fields, high temperatures and excessive dust and moisture.
- Should any material, liquid or solid, fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further.
- Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with mild detergent solution. Do not use any type of solvent such as alcohol or benzine which may damage the finish.
- Save the carton and associated packing material. These will be useful to transport or ship the unit.
- If you have any question about this unit, contact your nearest Sony dealer.

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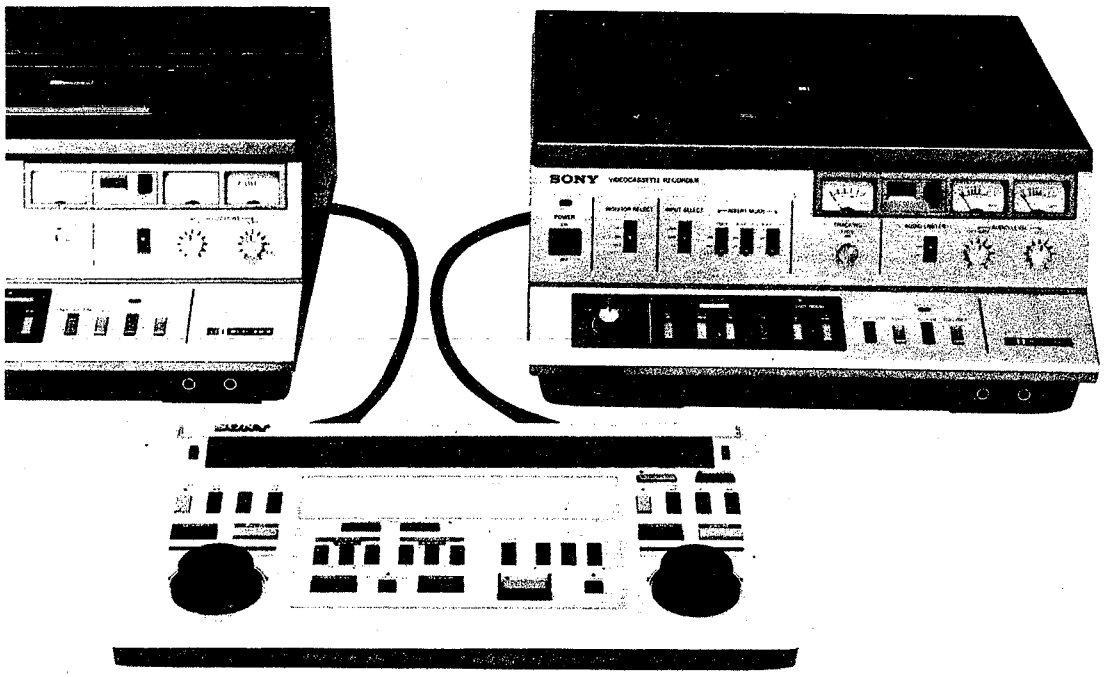
THE VIDEOCASSETTE RECORDER USED WITH THIS UNIT

Use the Sony Videocassette Recorders equipped with the REMOTE connector (20-pin or 33-pin).

	As a recorder	As a player
Betamax recorder	SLO-383	SLO-383, etc.
U-matic recorder	VO-2860 series VO-5850	VO-2860 series VP-2260, VO-5850 VO-5800 etc.

NOTE

The function of this unit is limited according to the function of the videocassette recorder to be connected to this unit.
Only the function of the used videocassette recorder can work with this unit.
For example, unless the recorder has the reverse function, the REVERSE (reverse playback) mode of this unit will not be operated.



FEATURES

Editing of a Betamax videocassette tape
By connecting the SLO-383 Videocassette Recorder to this unit, the electronic editing on the Betamax videocassette tape (1/2 inch), which has been impossible by a conventional videocassette recorder, becomes possible. The electronic editing on the U-matic tape (3/4 inch) is, of course, possible.

Search dial for finding editing points easily and quickly
The playback speed can be changed continuously from still to high in both forward and reverse direction.
A high-speed playback picture can also be monitored (Betascan). The editing points may be found easily and quickly by watching the picture.

Edit point memory system
The edit-in points for the playback machine and the recording machine and one edit-out point for either machines can be memorized.

Assembly and insert editing
In the assembly editing mode, the video, audio channel 1 and channel 2 signals can be edited simultaneously. In the insert editing mode, the video, audio channel 1 and channel 2 signals are independently selectable and any combination may be used.

Editing rehearsal "PREVIEW"
By pressing the PREVIEW button, it is possible to rehearse the edited state before actual editing.

Accurate review
By pressing the REVIEW button, it is possible to review the edited result just after actual editing of one portion.

Quick preview and review
By pressing the RETURN/JUMP button, the edit-in point can be monitored in the preview mode quickly and the edit-out point in the review mode. Therefore, the editing state can be checked quickly.

"BUTT" edit (continuous editing)
It is possible to continue the editing on the recorder by determining the previous edit-out point as the next edit-in point instead of re-entering the next edit-in point.

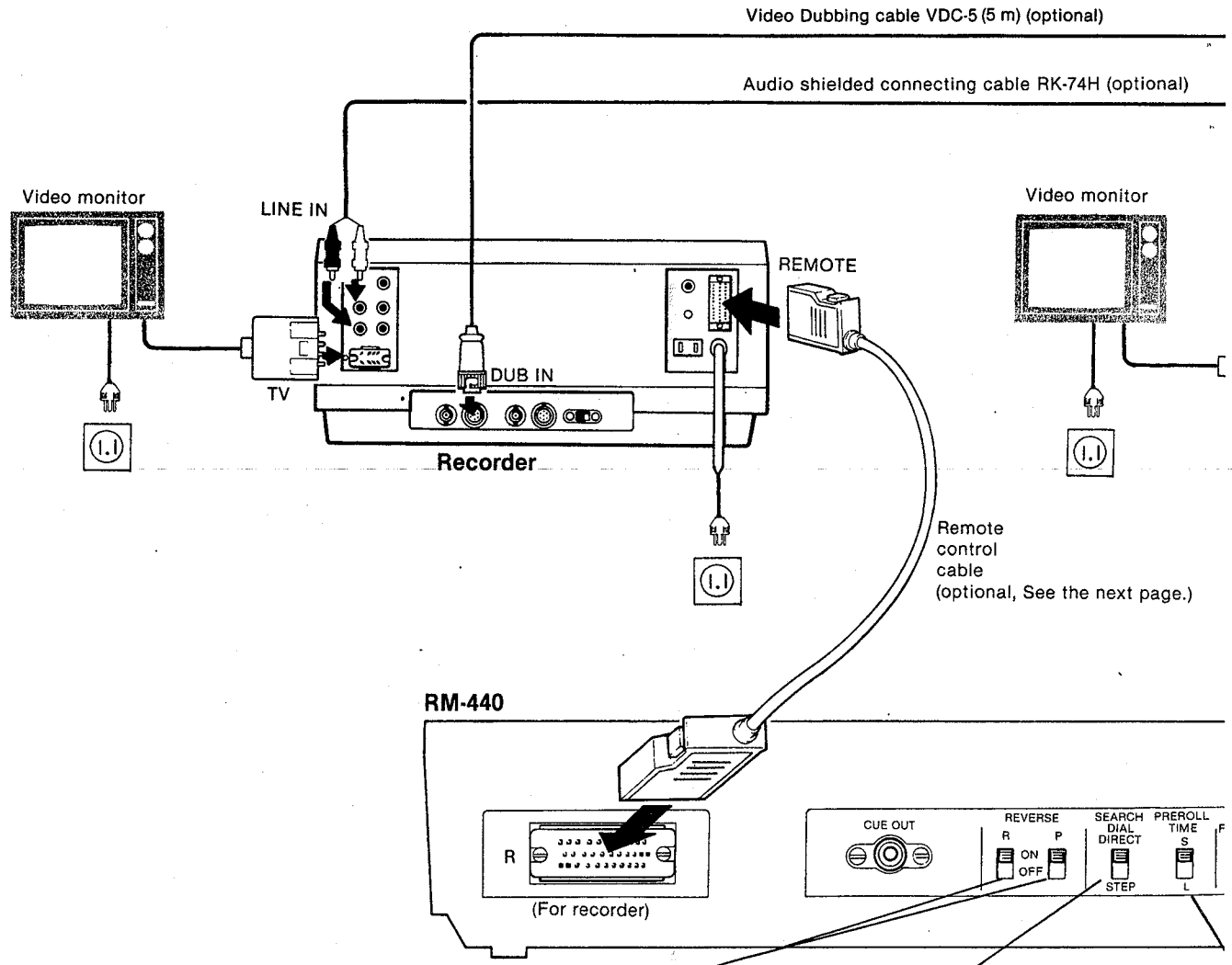
Cue signal for camera editing
This unit is equipped with the CUE OUT connector which provides the cue signal for camera recording.

Modification of the editing points
The TRIM function makes it possible to modify the edit-in and edit-out points frame by frame. Therefore, the editing points can be determined accurately.

Automatic tape protection
During editing, the PAUSE mode of the recorder is automatically released after 6 minutes holding and the tape is forwarded with the minimum search speed, which protects the video head and tape from being damaged.

1 CONNECTIONS

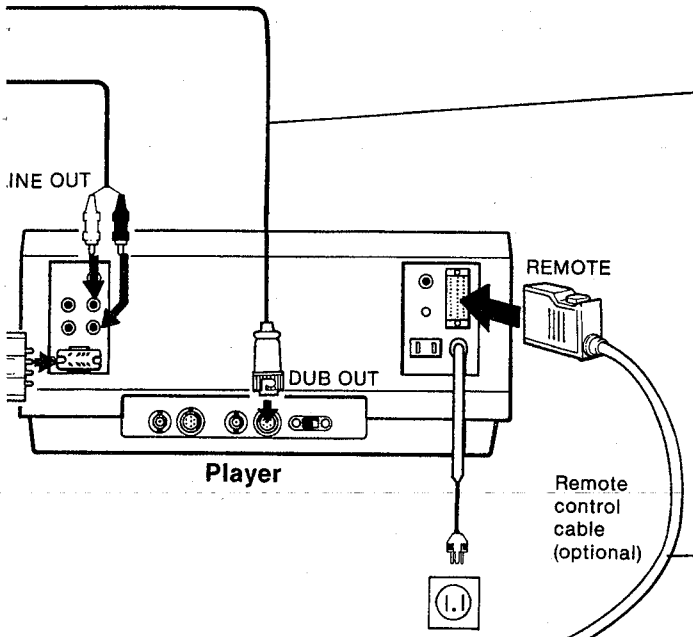
The illustration shows the SLO-383 Videocassette Recorders being used. Connections with other videocassette recorders are similar.



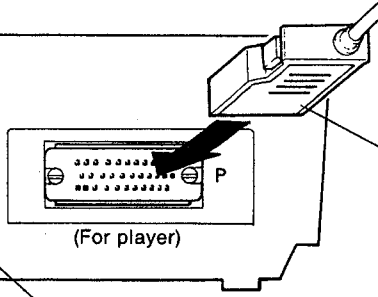
Location of the switches

REVERSE switches
R (for recorder)
P (for player)
Set depending on the videocassette recorder connected.
ON: When using a videocassette recorder with reverse function
OFF: When using a videocassette recorder with no reverse function

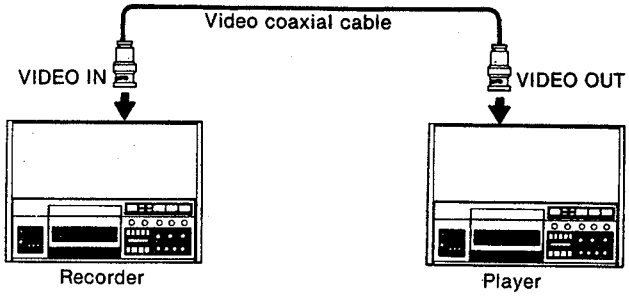
SEARCH DIAL switch
DIRECT: Normally set the switch to this position.
To set the videocassette recorder in the search mode, turn the Search dial.
STEP: If the switch is set to this position, the SEARCH button (on the front panel) must be pressed to set the videocassette recorder in the search mode.



Remote control cable (optional)

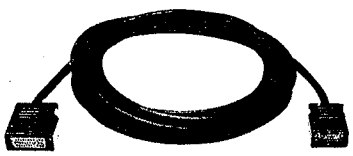


If a videocassette recorder which is not equipped with the DUB connector is used as a playback machine, use the VIDEO IN and OUT connectors instead of the DUB connector.



- For best quality pictures, however, we recommend using the DUB connector.
- Do not make simultaneous (parallel) connections with the DUB IN connector on the playback machine and the DUB OUT connector on the recording machine.

Use the **RCC-5F** Remote Control Cable (33-pin/33-pin, 5 m, optional) to connect videocassette recorders with a 33-pin REMOTE connector, such as the SLO-383.
Use the **RCC-5E** Remote Control Cable (33-pin/20-pin, 5 m, optional) to connect videocassette recorders with a 20-pin REMOTE connector, such as those in the VO-2860 series.



Remote control cable

FRAME switch
30: When using the unit in an area where NTSC system has been adopted (30 frames).
25: When using the unit in an area where PAL/SECAM system has been adopted (25 frames).

PREROLL TIME switch
S: Normally set the switch to this position. The preroll time will be 5 seconds.
L: To change the preroll time to 10 seconds, set the switch to this position.

- Insert the connector with the button on the left side.
- To disconnect, press the button in and pull the connector out.

2 PREPARATION FOR EDITING

For details on the operation of the videocassette recorder, refer to the instruction manual furnished with each model.

Insert the recorded cassette (materials for editing)

Video monitor

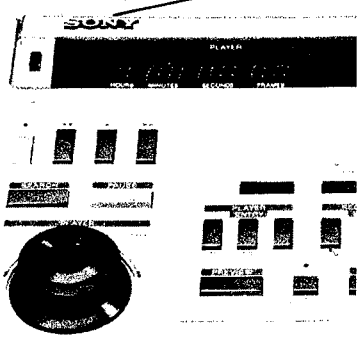
Turn the power on. Set the INPUT SELECT switch so that the picture from the player can be monitored.

Set the POWER switch to ON.

INPUT SELECT switch
Set this switch to the position which indicates where the external video input signal is connected. If switching noise appears on the playback picture, set this switch to the position where no external video input signal is applied. The player will then operate with the internal sync signal. For example, the TV off-air signal from a receiver/monitor may contain switching noise and cause an unstable playback picture so that, if a receiver/monitor is connected, this switch must be set to LINE or DUB or the TV receiver must be disconnected.

TRACKING control (and SKEW control)
Before editing, adjust the tracking control by playing back the tape.
(If the VTR is equipped with a SKEW control, adjust this control as well.)

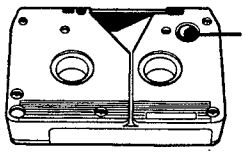
PLAYER



Operating buttons for player
With these buttons the player can be remotely controlled.

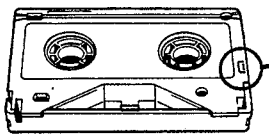
Insert a new videocassette

U-matic videocassette

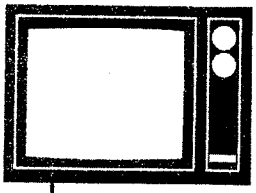


Make sure that the red button is in place.

Betamax videocassette

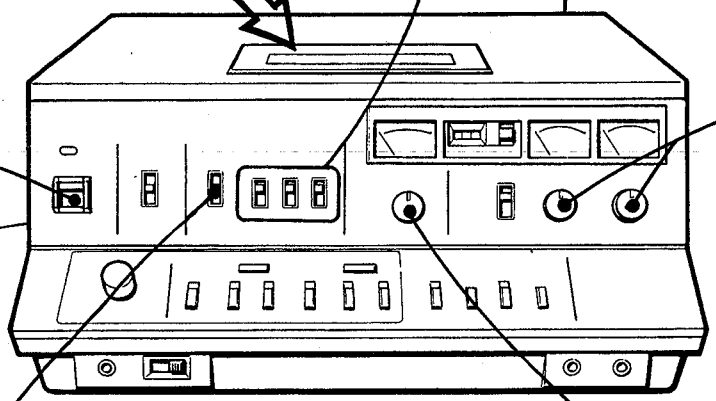


Make sure that the safety tab is not removed or that the hole is covered with a piece of cellophane or vinyl tape.



Video monitor
Turn the power on. Set the INPUT SELECT switch so that the picture from the recorder can be monitored.

INSERT MODE switch
Refer to the next page.



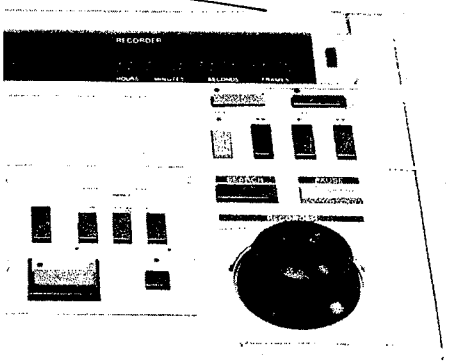
Set the POWER switch to ON.

AUDIO LEVEL controls (and VIDEO LEVEL controls) Before editing, set the player in the playback mode and adjust the audio recording level of the recorder. (If the recorder is equipped with a VIDEO LEVEL control, adjust the video recording level as well.)

INPUT SELECT switch
When the DUB connector is used: Set the switch to DUB.
When the VIDEO IN connector is used: Set the switch to LINE.

TRACKING control (and SKEW control)
Before editing, adjust the tracking control by playing back the recorded tape. (If the recorder is equipped with a SKEW control, adjust this control as well.)

RECORDER



Operating buttons for recorder
With these buttons the recorder can be remotely controlled.

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3 SELECT THE EDITING MODE

TO PERFORM ASSEMBLY EDITING

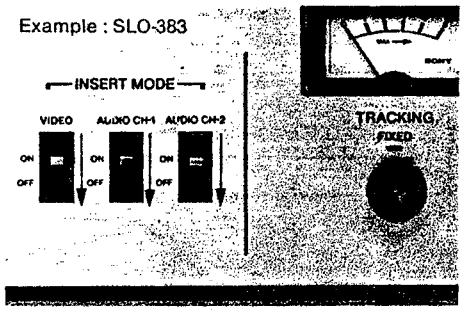
Press the ASSEMBLE button.
If any or all of the INSERT lamps is (are) lit, press the INSERT button(s) to turn off the lamp(s) and then press the ASSEMBLE button.

TO PERFORM INSERT EDITING

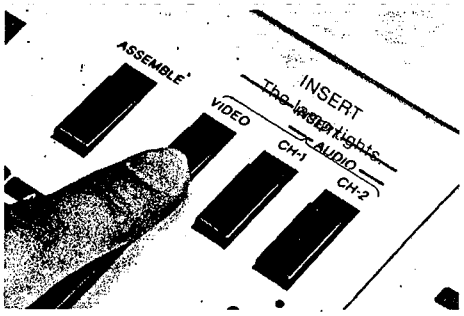
When using a recorder equipped with 33-pin REMOTE connecter

❶ Set the INSERT MODE switches on the videocassette recorder being used as a recording machine to the OFF position so that the insert mode can be turned on and off by the RM-440.

Example : SLO-383



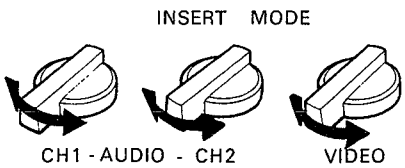
❷ Select the desired input signal with any or all of the INSERT buttons of the RM-440.
Pressing a button turns it on (the lamp lights) and pressing it again turns it off (the lamp goes off). If the ASSEMBLE lamp is lit, press the ASSEMBLE button to turn off the lamp and then press the INSERT button(s).



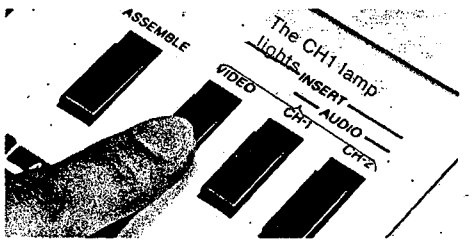
When using a recorder equipped with 20-pin REMOTE connector

Example: VO-2860 Series

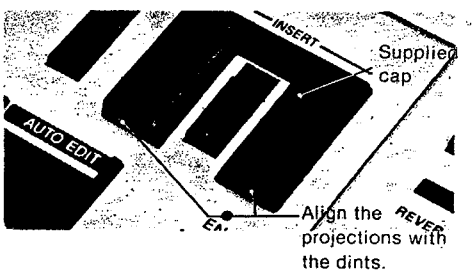
❶ Select the signal to be edited with the INSERT MODE switches on the videocassette recorder being used as a recording machine.
● The input signal cannot be selected by the RM-440.



❷ Press one of the INSERT buttons on the RM-440.
There are three INSERT buttons–VIDEO, AUDIO CH1 and AUDIO CH2 on the RM-440. When one of the buttons is pressed, the AUDIO CH1 lamp lights, indicating that the recorder is now in the insert mode.



● When using a recorder equipped with 20-pin REMOTE connector, put the supplied cap over the VIDEO and CH2 INSERT buttons so that only the CH1 button and lamp are visible.
The cap has adhesive tapes on the bottom. Peel off the paper on the bottom and attach the cap aligning the projections of the cap with the dints on the front panel.
Press the cap on the front panel.

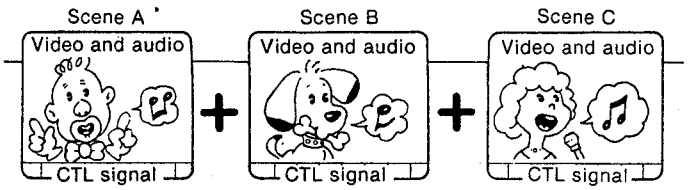


EDITING MODES

•ASSEMBLY EDITING
•INSERT EDITING

ASSEMBLY EDITING

In the assembly edit mode, all the signals–video, audio channel 1 and channel 2 and CTL signals–are recorded on the tape simultaneously. First record the video, audio and CTL signals of scene A and then record the video, audio and CTL signals of scene B, scene C, scene D and so on.

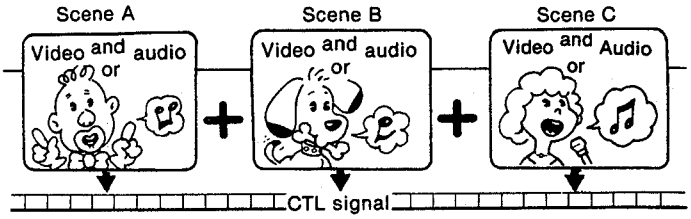


The assembly edit mode is the mode to use when new video and audio signals are going to be recorded shot by shot in the sequence they were taken.

If the new material is edited on a previously recorded tape in the assembly mode, the fully erased portion will be produced on the tape after the edit-out point and the picture will be unstable at that point. If this is unacceptable, edit in the insert edit mode.

INSERT EDITING

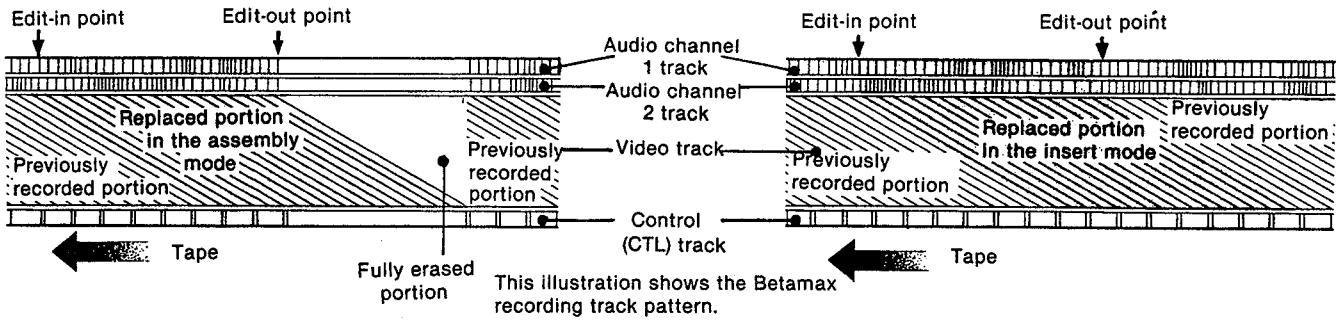
In the insert edit mode, the CTL signal should have already been recorded. New video and/or audio signals are added keyed to this CTL signal.



The insert edit mode is the mode to use when you want—

- to add music and/or narration to a tape on which the video signal has been already recorded.
- to add video signal to a tape on which an audio signal has been already recorded.
- to replace the video and/or audio signals of a tape which has been edited in the assembly mode.

In the insert edit mode, a new scene can be inserted into a previously recorded tape. The picture will be stable at the edit-out point.



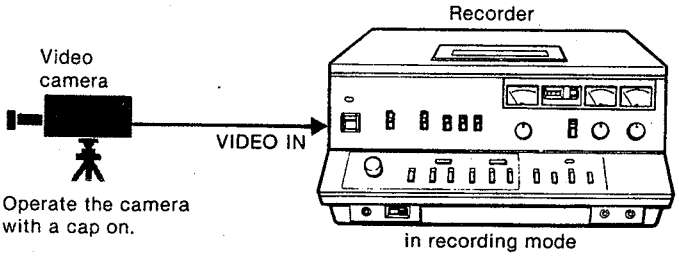
This illustration shows the Betamax recording track pattern.

TO RECORD ON A NEW TAPE IN THE INSERT MODE

A CTL signal must be recorded on the tape to be recorded in the insert mode. To record the CTL signal :

- Connect a video camera and continuously record its output signal.
- Connect a standard video signal generator and continuously record its output signal.

The CTL signal should be recorded continuously in the portion to be recorded and for at least 5 seconds (10 seconds, if the PREROLL TIME switch is at the L position) prior to and after that portion.

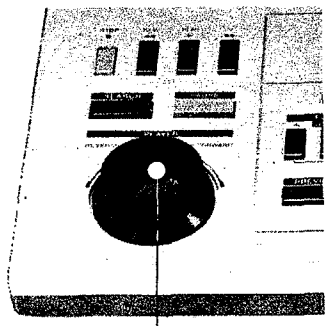


TO RECORD ON A NEW TAPE IN THE ASSEMBLY MODE

It is not necessary to record the CTL signal in advance, but if the assembly edit is to be made from the beginning of the new tape or after a blank on the tape, a CTL signal has to be recorded for at least 5 seconds (10 seconds, if the PREROLL TIME switch is at the L position) prior to the first edit-in point. Instead of recording a CTL signal, you may simply duplicate the tape in the record mode.

Basic operation

4 DETERMINE THE BEGINNING (EDIT-IN POINT) AND END (EDIT-OUT POINT) OF THE SCENE TO BE RECORDED



PLAYER

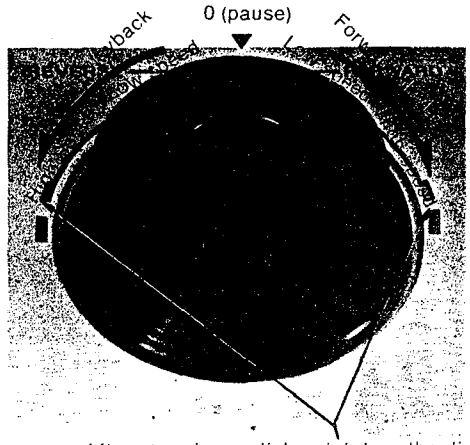
EDIT-IN POINT

❶ To set the player in the playback mode, turn the Search Dial.

- If the videocassette recorder does not operate by turning the Search dial, press the SEARCH button and then turn the Search dial.
- If the videocassette recorder has no reverse function, it will not go in reverse even if the dial is turned to the reverse side. Use the REW button to reverse the tape.

❷ Locate the point where the scene is to start by watching the video monitor.

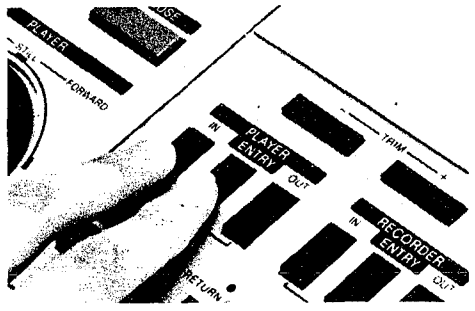
❸ At the desired edit-in point, set the Search dial to the 0 position to pause the tape.



After stopping a click point, turn the dial again and the tape will be in the Betascan (Picture search) mode.

❹ Simultaneously press the IN and ENTRY buttons for the player to enter this edit-in point.

- The IN lamp will stop blinking and will light up. At this time the numbers on the Time Counter are memorized in this unit as the edit-in point.
- The first edit-in point should be at least 5 seconds after the beginning of the tape. (At least 10 seconds when the PREROLL TIME switch is set to the L position.)
- To re-enter the edit-in point, locate the desired point and press the IN and ENTRY buttons again.



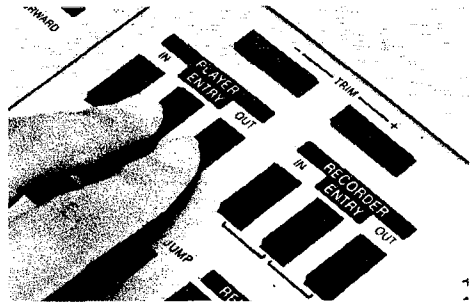
EDIT-OUT POINT

❶ Locate the point by turning the Search Dial where the scene is to end by watching the video monitor.

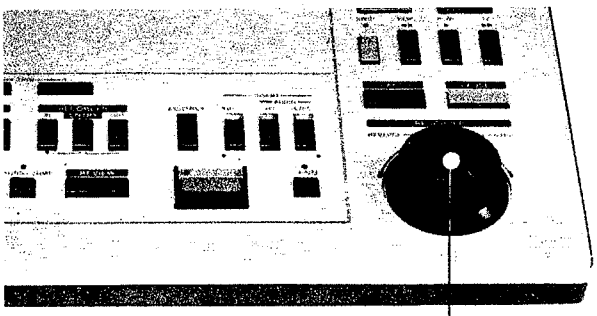
❷ At the desired edit-out point, set the Search dial to the 0 position.

❸ Simultaneously press the OUT and ENTRY buttons for the player to enter the edit-out point.

- The OUT lamp will stop blinking and will light up to indicate that the edit-out point is memorized.
- The edit-out point for the assembly editing should be determined on the player.



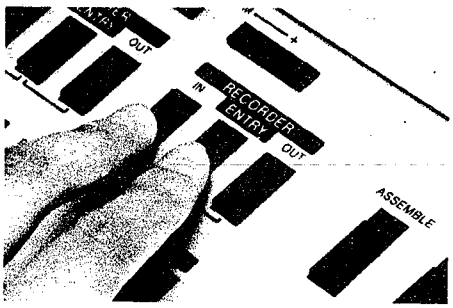
Note :
The IN and OUT lamps blink alternately if the same point is entered as the edit-in point and edit-out point or if the edit-out point is entered before the edit-in point, so editing or previewing cannot be done. Enter the edit-in and edit-out points correctly.



RECORDER

EDIT-IN POINT

❶ Locate the point by turning the Search Dial where the scene is to start by watching the video monitor. Set the Search dial to the 0 position at this point.
❷ Simultaneously press the IN and ENTRY buttons for the recorder to enter the edit-in point.

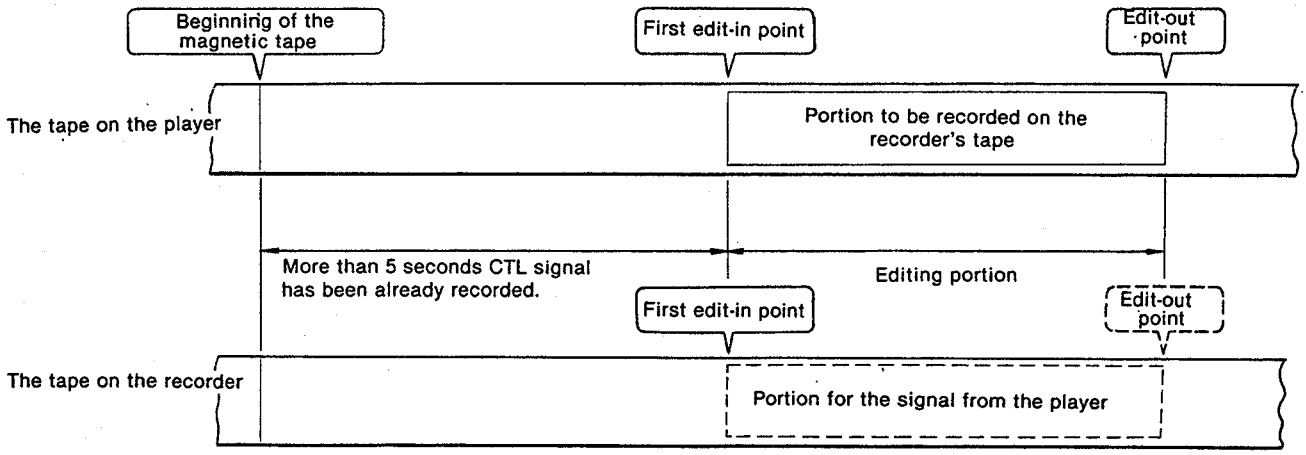


- The IN lamp will stop blinking and will light up.
- The first edit-in point should be at least 5 seconds after the beginning of the tape. (At least 10 seconds when the PREROLL TIME switch is set to the L position.)

EDIT-OUT POINT

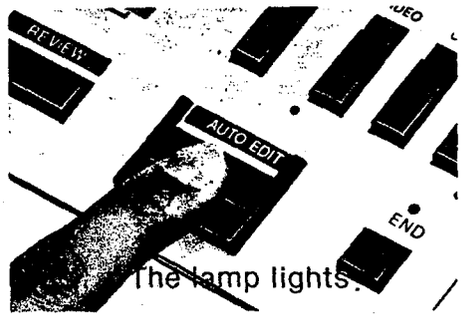
The edit-out point into either the player or the recorder should be entered. The OUT lamp of either one will light. If the edit-out point is to be entered into the recorder, proceed as follows :

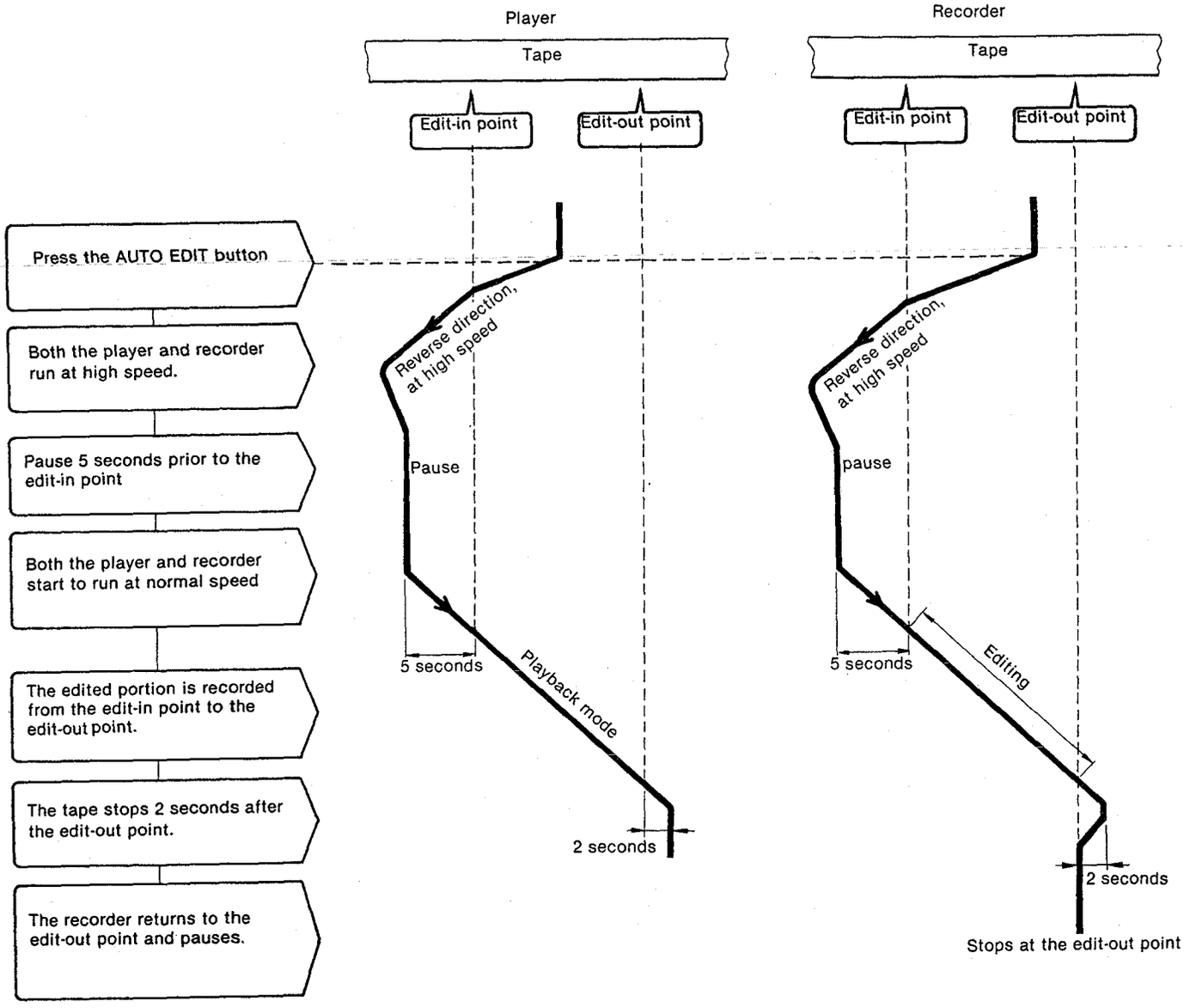
❶ Locate the point by turning the Search Dial where the scene is to end by watching the video monitor and set the dial to the 0 position.
❷ Simultaneously press the OUT and ENTRY buttons for the recorder to enter the edit-out point.


Beginning of the magnetic tape
First edit-in point
Edit-out point
The tape on the player
Portion to be recorded on the recorder's tape
More than 5 seconds CTL signal has been already recorded.
Editing portion
First edit-in point
Edit-out point
The tape on the recorder
Portion for the signal from the player

5 TO BEGIN EDITING

Press the AUTO EDIT button.
Editing will automatically proceed as in this diagram.




Player
Tape
Edit-in point
Edit-out point
Recorder
Tape
Edit-in point
Edit-out point
Press the AUTO EDIT button
Both the player and recorder run at high speed.
Pause 5 seconds prior to the edit-in point
Both the player and recorder start to run at normal speed
The edited portion is recorded from the edit-in point to the edit-out point.
The tape stops 2 seconds after the edit-out point.
The recorder returns to the edit-out point and pauses.
Reverse direction, at high speed
Pause
5 seconds
Playback mode
2 seconds
Reverse direction, at high speed
pause
5 seconds
Editing
2 seconds
Stops at the edit-out point

TO MONITOR DURING RECORDING

You can monitor the recording from several seconds prior to the edit-in point to 2 seconds after the edit-out point on the video monitor connected to the recording machine.

TAPE TRAVEL BEYOND THE EDIT-OUT POINT

Recording

In the assembly editing mode, the recording will continue 2 seconds after the edit-out point. Then the tape will return to the edit-out point and a still picture of that point will be displayed.

In the insert editing mode, the recording will end at the edit-out point, but the tape will run for 2 more seconds. Then the tape will return to the edit-out point and a still picture of that point will be displayed.

Playback

The tape will run for 2 more seconds after the edit-out point, then it will stop and a still picture will be displayed.

TO STOP DURING RECORDING

To stop the recording before the edit-out point, press the END button.
The point where the END button has been pressed becomes the new edit-out point.

WHEN THE RECORDING IS FINISHED

When the recording of one scene (from the edit-in point to the edit-out point) is finished, search for and enter the edit-in and edit-out points for the next scene, as described on page 10.

TO CHANGE THE PREROLL TIME

The 5 seconds prior to the edit-in point (the preroll time) can be changed, if necessary, to 10 seconds by means of the PREROLL TIME switch on the rear panel of this unit.

CAUTION
Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions to the copyright laws.

Advanced operations
Once the basic operations come naturally, you can begin to use these more advanced operations.

TO REHEARSE BEFORE EDITING: THE PREVIEW MODE

Once the edit-in and edit-out points have been set, you can conduct a rehearsal by pressing the PREVIEW button.

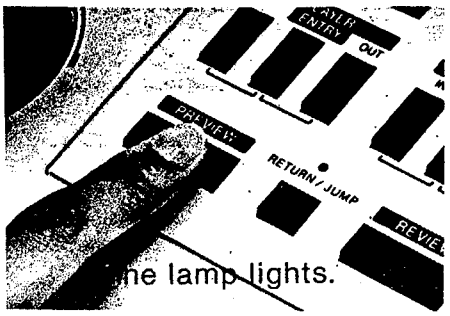
❶ After the edit-in and edit-out points have been set, **press the PREVIEW button.**
Both the player and recorder start to operate as in the editing modes. (Refer to the table on page 12.)*

❷ **Watch the recorder's monitor.**
Both the player and recorder run up to 2 seconds beyond the edit-out point and then stop. The scene will not actually be recorded, but watching the recorder's monitor you can check that the edit-in and edit-out points are correct and that the quality of the picture to be recorded is good.
This is possible because the video input signal to be recorded is frequency-modulated, then demodulated in the recorder for display on the monitor.

❸ If necessary, re-enter the edit-in and edit-out points and check them again.

❹ If the edit-in and edit-out points are correct, press the AUTO EDIT button. The recording will begin.

* If a recorder equipped with a 20-pin remote connector is used as a recorder in the assembly mode, the recorder will stop at the edit-in point and pause. The monitor for the recorder will show the preview picture.

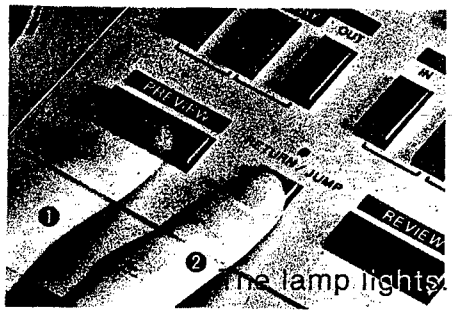


TO CHECK ONLY THE EDIT-IN POINT: THE RETURN MODE

Use the Return mode to preview the edit-in point.

❶ During preview mode, at any time after the edit-in point, **press the RETURN/JUMP button.**
The RETURN lamp lights. The preview mode is stopped, both the player and recorder will return to the edit-in point and a still picture will be shown.

❷ If necessary, press the PREVIEW button to conduct a preview.

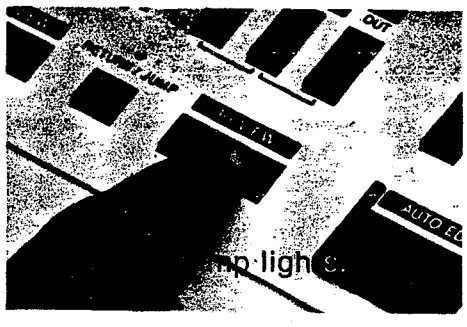


TO STOP THE PREVIEW MODE

Press the PAUSE button for the player and recorder on the RM-440.

TO CHECK THE RECORDING: THE REVIEW MODE

When the recording of one scene (from edit-in point to edit-out point) has been finished, the result can be checked by means of the REVIEW button.

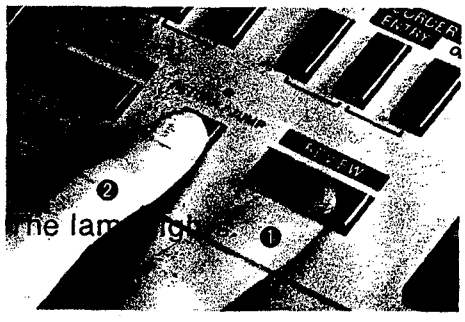


❶ After the recording has been made, **press the REVIEW button.**
The REVIEW lamp will light up.
Only the recorder operates in the same manner as in the editing mode. (Refer to the table on page 12.)
The player does not operate.
❷ **Watch the recorder's monitor.** The recorded picture from several seconds prior to the edit-in point to the 2 seconds after the edit-out point will be displayed.
When the review is finished, the recorder returns to the edit-out point.

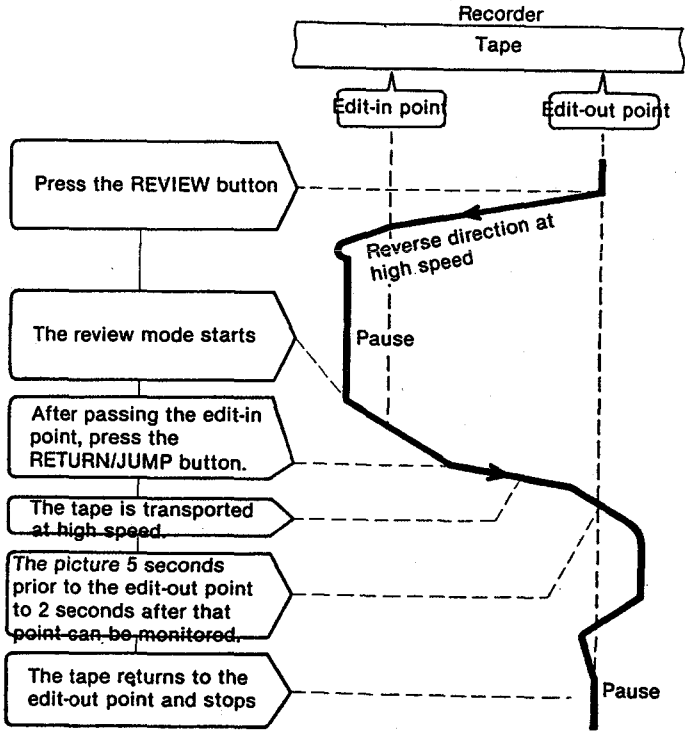
To stop the review mode, press the PAUSE button.

TO CHECK THE EDIT-OUT POINT QUICKLY: THE JUMP MODE

During the review mode, the recorded portion can be advanced rapidly and the edit-out point can be checked by using the jump mode.



During the review mode, at any time after the edit-in point, **press the RETURN/JUMP button.**
The JUMP lamp lights. The review mode is stopped and the tape runs at high speed until it reaches a point 5 seconds prior to the edit-out point. From this point the tape runs at normal playback speed to a point 2 seconds after the edit-out point showing a picture on the monitor screen.
After playback, the recorder returns to the edit-out point and a still picture is displayed.
● If the recorder does not have the high speed playback function, the jump mode cannot be obtained.


Recorder
Tape
Edit-in point
Edit-out point
Press the REVIEW button
Reverse direction at high speed
The review mode starts
Pause
After passing the edit-in point, press the RETURN/JUMP button.
The tape is transported at high speed.
The picture 5 seconds prior to the edit-out point to 2 seconds after that point can be monitored.
The tape returns to the edit-out point and stops
Pause

QUICK EDITING

You can edit more quickly by entering the edit-in and edit-out points during preview as follows.

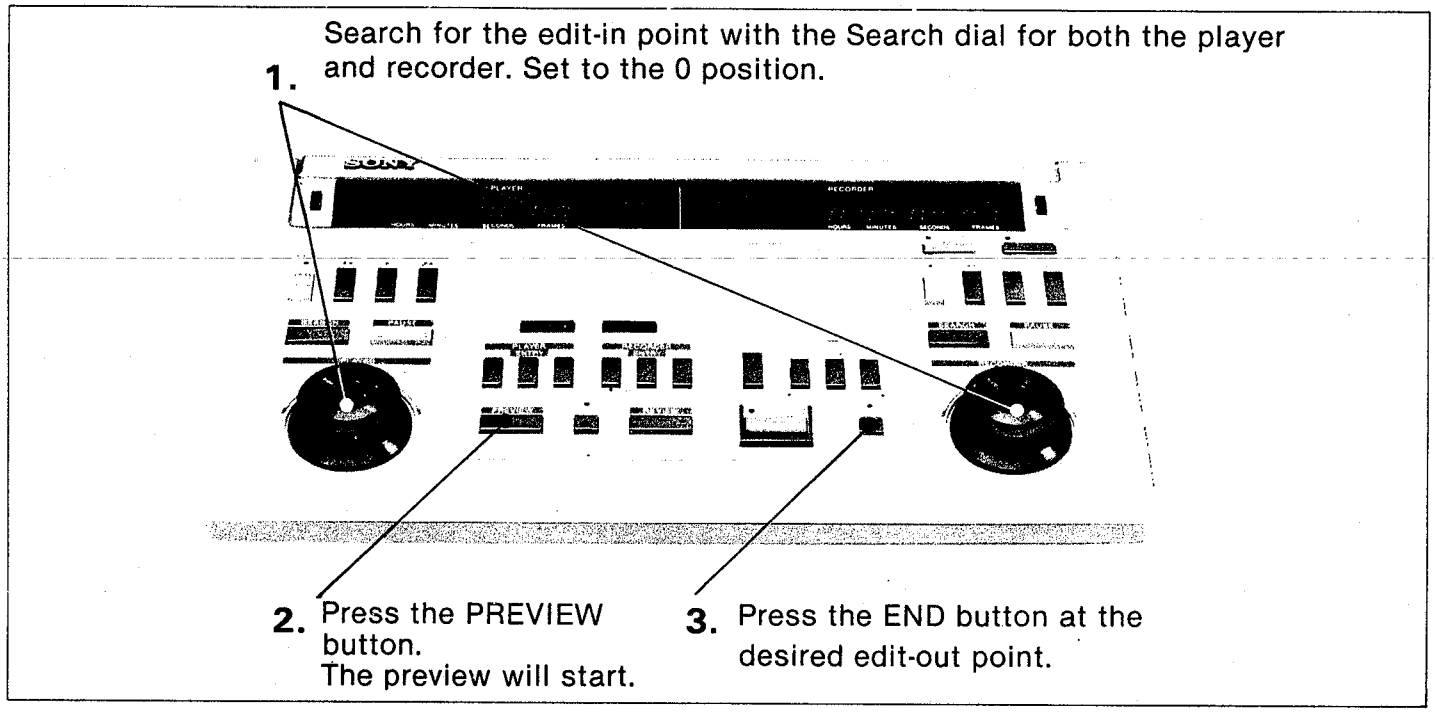
❶ Search for the point where the scene is to start for the player and recorder by turning their Search dials. Set the dials to their 0 positions to pause the tape.

❷ Press the PREVIEW button and the position you have chosen in step ❶ will be memorized as an edit-in point for both the player and recorder. The IN lamp will light. The preview will start.

❸ Search for the point where the scene is to end by watching the picture on the monitor. Press the END button at the desired point, which will then be memorized in the player as the edit-out point. The OUT lamp will stop blinking and will light. After 2 seconds both the player and recorder will pause.

❹ Preview the tape and, if necessary, change the edit-in or edit-out point. (Refer to page 10 or the next page.)

❺ Press the AUTO EDIT button to perform the editing.


1. Search for the edit-in point with the Search dial for both the player and recorder. Set to the 0 position.
2. Press the PREVIEW button.
The preview will start.
3. Press the END button at the desired edit-out point.

To set the edit-out point more precisely

After the step ❸ has been finished, search for the edit-out point for the player by turning the Search dial and re-enter the edit-out point by pressing the ENTRY and OUT buttons. Then press the AUTO EDIT button to edit.

TO EDIT EVEN MORE QUICKLY

You can edit without entering the edit-in and edit-out point.

❶ Search for the point where the scene is to start by turing the Search dials for both the player and recorder and set the dials to their 0 positions to pause the tape.

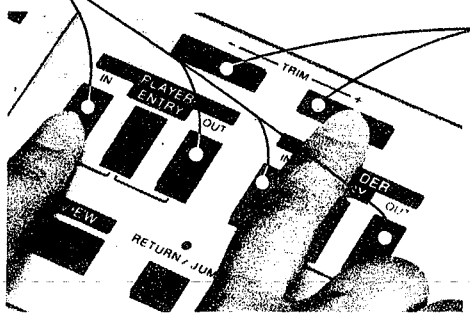
❷ Press the AUTO EDIT button. Recording will begin from that point which will be the edit-in point.

❸ At the desired point, press the END button. The recording will stop at this point, which will be the edit-out point.

FINE ADJUSTMENT OF THE EDITING POINTS USING THE TIME COUNTER: THE TRIM MODE

To set the edit-in point and edit-out point precisely, it is possible to change the editing points one frame at a time.

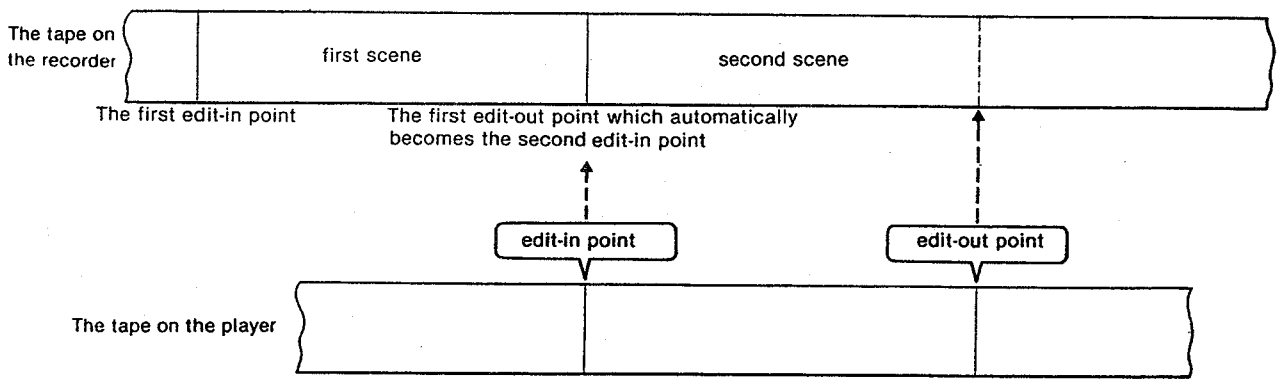
❶ Press the IN or OUT button and hold it down through step ❷.
The frame number of the edit-in or edit-out point will be displayed on the time counter.



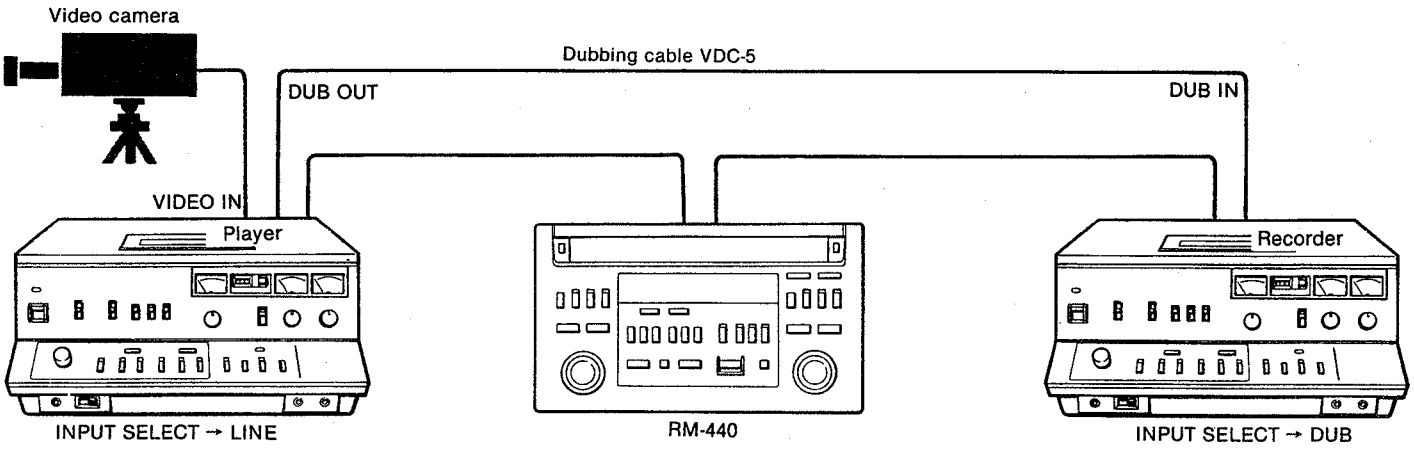
❷ Press and release the TRIM + button to advance the editing point one frame and press and release the TRIM – button to set the editing point back one frame.
The number on the time counter will change according to the movement of the frame.

CONTINUOUS EDITING: THE BUTT EDIT

When you have finished recording from an edit-in point to an edit-out point, the recorder returns to the edit-out point and stops. You can make this edit-out point the next edit-in point for the recorder and so Butt edit.
❶ Search for and enter the next edit-in and edit-out points for the player.
❷ Press the AUTO EDIT button.
The editing will be performed.
Or you may proceed as follows:
❶ Search for and enter the next edit-in point for the player.
❷ Press the AUTO EDIT button.
The recording will be performed.
❸ To stop recording, press the END button.
This point will be the edit-out point.


The tape on the recorder
first scene
second scene
The first edit-in point
The first edit-out point which automatically becomes the second edit-in point
edit-in point
edit-out point
The tape on the player

EDITING WITH A SIGNAL FROM A VIDEO CAMERA: THE LIVE EDIT



CONNECTIONS

To record while editing using a signal from a video camera and signal from a player:
Make the connections as shown in the illustration.
When the player is set in the playback mode, the playback signal of the tape will be supplied to the recorder. When the player is set in the stop mode, the signal from the video camera will be supplied to the recorder.

To record while editing a signal from a video camera only:
Connect a video camera to the VIDEO IN connector of the recorder. Set the INPUT SELECT switch of the recorder to LINE.

OPERATION

Set the player in the stop mode.

Assembly edit: Enter only the edit-in point of the recorder and start recording the camera signal with the AUTO EDIT button. To stop the recording, press the END button.

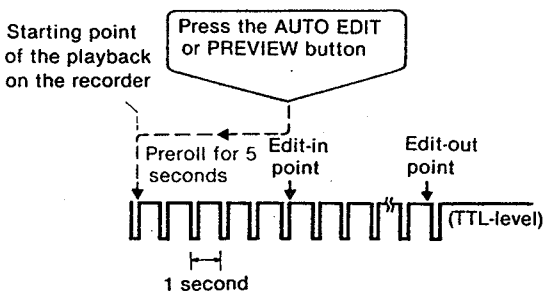
Insert edit: Enter the edit-in and edit-out points of the recorder and start recording with the AUTO EDIT button. If the recording is begun without entering the edit-out point, stop the recording by pressing the END button.

● During the preview of the live edit in the assembly mode, the edit-out point cannot be entered.

CUE OUT CONNECTOR ON THE REAR PANEL

When the RM-440 is set in the AUTO EDIT or the PREVIEW mode, the CUE signal will be applied from this connector from 5 seconds prior to the edit-in point to the edit-out point to the recorder as illustrated.
This signal can be used as a tally signal for a video camera or as a starting signal for an audio tape recorder.

● If the CTL signal is not recorded on the recorder's tape, the cue signal is not applied.



MANUAL EDITING

CONNECTIONS

Same as the connections for automatic editing. (Refer to page 4.)

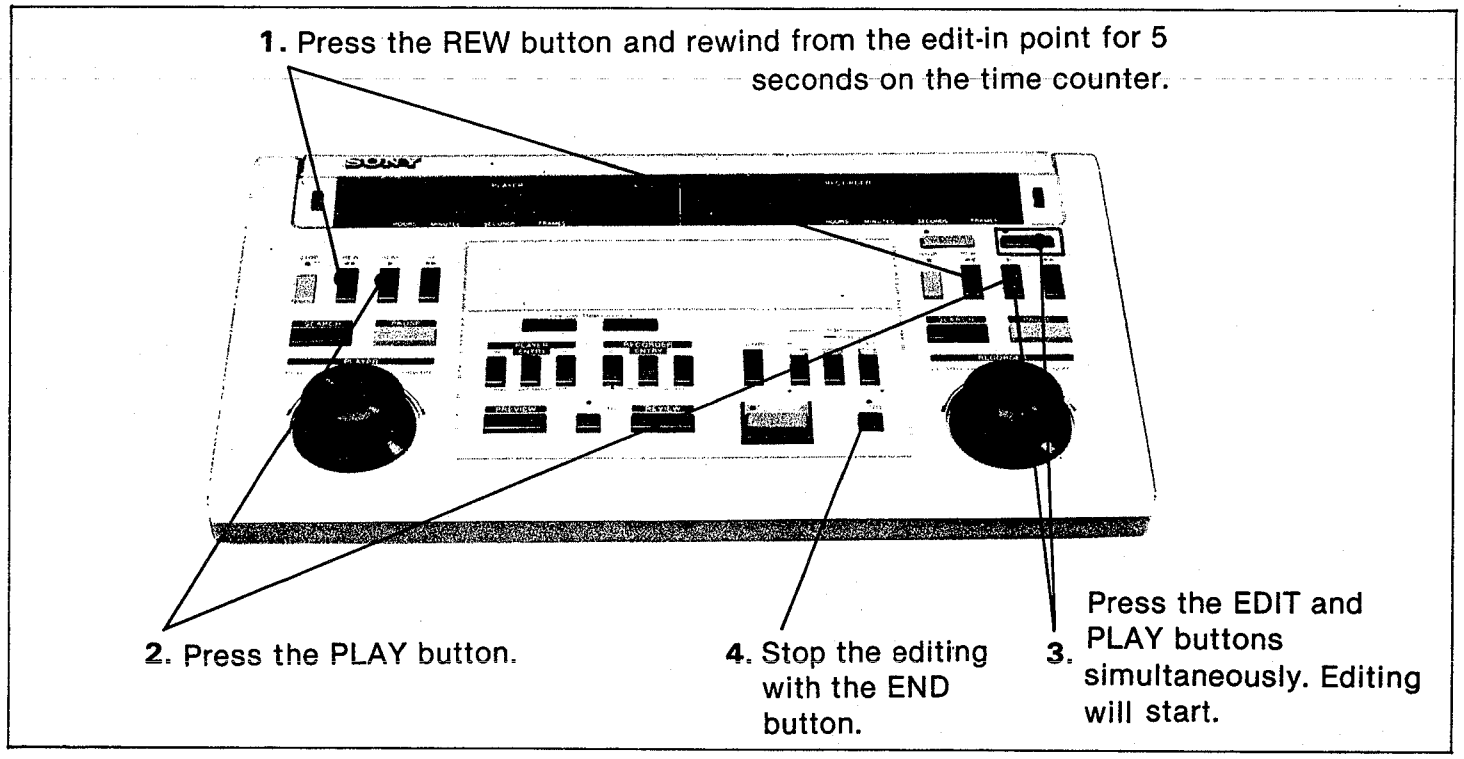
SELECTION OF THE MODE

When using the recorder equipped with 33-pin REMOTE connector
Select the desired mode with the ASSEMBLE or INSERT button of this unit.

When using the recorder equipped with 20-pin REMOTE connector
Assembly edit : Press the ASSEMBLE button of the unit.
Insert edit : Select the insert mode on the videocassette recorder and press one of the INSERT buttons of this unit.

OPERATION

❶ Rewind the tape for at least 5 seconds from the point where the scene is to start for both the player and recorder by watching the numbers on the time counters.
❷ Start playback by pressing the PLAY buttons for both the player and recorder.
❸ When the tape reaches the desired edit-in point, simultaneously press the EDIT button and the PLAY button for the recorder and the recording will start.
❹ To stop recording, press the END button. The tape will still run. To stop the tape, press the PAUSE or STOP button.

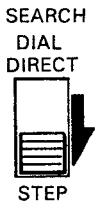

1. Press the REW button and rewind from the edit-in point for 5 seconds on the time counter.
2. Press the PLAY button.
4. Stop the editing with the END button.
3. Press the EDIT and PLAY buttons simultaneously. Editing will start.

- To obtain a perfectly stable playback picture, start the playback more than 5 seconds prior to the edit-in point.
- If the editing is started from the pause mode or is stopped by the PAUSE button, the picture will be unstable where the pause function has been activated.
- A still picture cannot be recorded.

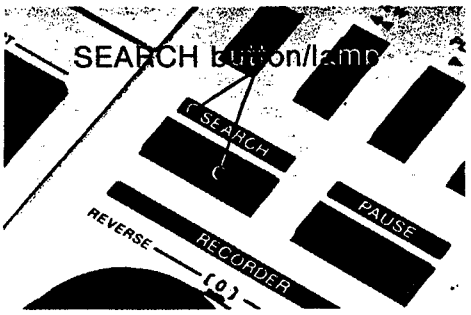
USEFUL OPERATION

SEARCH DIAL

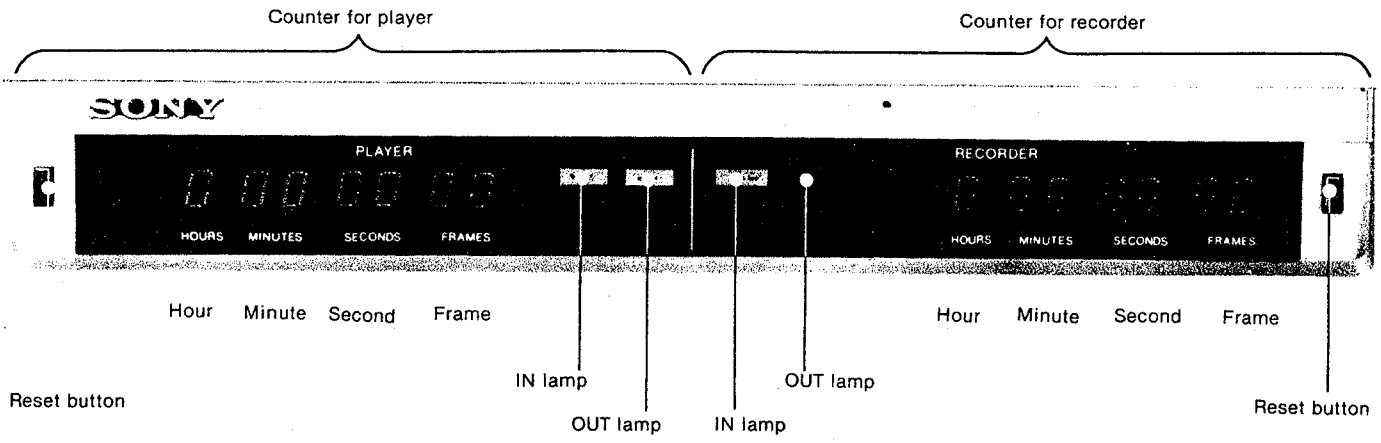
During operating this unit, if the Search dial is touched, the unit may be switched to the search mode. To prevent this, set the SEARCH DIAL switch (on the rear panel) to STEP and the Search dial will not work until the SEARCH button is pressed (the lamp lights). If the Search dial is set to the desired position, the desired speed playback will be obtained by pressing the SEARCH button.



If the connected videocassette recorder is equipped with the Betascan (picture search) function and a 33-pin REMOTE connector, the unit is set into the Betascan mode by turning the Search dial clockwise or counterclockwise past the point where you feel a slight catch to the point where you hear a click sound. The click sound indicates that the recorder has assumed the Betascan mode. To release the Betascan mode, turn the Search dial past the catch position toward the 0 position.



TIME COUNTER

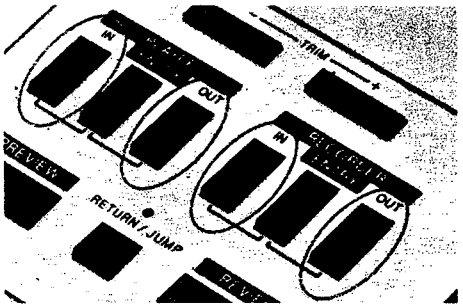


- The counter number indicates how much the tape has advanced at normal speed by hours, minutes, seconds and frames. It will be changed with the tape motion.
- To set the time counter to "0", press the reset button. For the reverse running from "0", "–" (minus) will be indicated.
- When the edit-in and edit-out points are entered into this unit, the counter number of these points will be memorized. Therefore, do not press the reset button until the editing of that portion is finished, otherwise, the entry will be cancelled.
- Set the counter number to "0" at the beginning of the player tape, start the playback and make a note of the counter number and the contents of the tape, and the note will be useful for searching the editing point. In this case, do not reset the counter for the player until all the editing on the tape is finished.
- The counter number indicates the number counting the CTL signal on the tape, therefore, when playing back a tape missing some CTL signals, an error on the number may be occurred. If you proceed rewind or fast forward operation many times, an error may cause on the counter number as well.

The counter number does not change with a new tape because no CTL signal is recorded on the new tape.

CALLING UP THE EDITING POINTS

While the IN or OUT button for the player and recorder is pressed, the respective IN or OUT lamp will blink quickly and the time counter will indicate the editing points by number so that they can be easily checked.



BLINK OF THE LAMPS

Operate the buttons above which the lamps are slowly blinking, and the editing can be completed. The blinking and lighting of lamps are as follows.

- The ASSEMBLE and INSERT (VIDEO, AUDIO CH1, AUDIO CH2) lamps blink slowly in the playback mode indicating that the editing mode is to be determined by pressing the appropriate button.

One or more lamps light indicating that the editing mode has been determined.

- The IN and OUT lamps for the player and recorder blink slowly indicating that the editing points must be entered.

The IN and OUT lamps light when the edit-in and edit-out points have been entered but the editing has not been performed.
The IN or OUT lamps blinks rapidly when either the edit-in or edit-out point is called up.

- The PREVIEW and AUTO EDIT lamps blink slowly indicating that you can proceed either the preview or auto edit operation.

The PREVIEW or AUTO EDIT lamp lights to indicate that the recorder is in one of these modes.

- The END lamp blinks in the preview or auto edit mode, indicating that the edit-out point has not been entered.

The END lamp lights, indicating that the edit-out point has been entered.

RETURN/JUMP BUTTON

To return to the edit-in point after auto edit or review mode, press the RETURN/JUMP button. The time counter number of the edit-in and edit-out points can be called up.
The IN and OUT lamps light.

TAPE PROTECTION MODE

While either the player or recorder is searching the editing point, the videocassette recorder which has finished the entry may be waited for a long time. In this case, if the videocassette recorder stays in the PAUSE (or STILL) mode for a long time, it will be usually released and entered into the STOP mode. To avoid it and to protect the tape from being damaged, this unit features a safety device which makes the waiting videocassette recorder run automatically at extremely low speed (at minimum speed of the videocassette recorder), if the PAUSE (or STILL) mode continues more than 6 minutes.
During this mode, the memorized information is still retained, therefore the editing can be continued even in this mode.
This mode functions only when the edit-in or edit-out point is entered.
Otherwise the recorder will enter into the STOP mode if it is left in the pause mode for an extended period of time.

Note:
The videocassette recorder is designed to slack the tension on the tape in the stop mode to protect the tape from being damaged. So, if the SEARCH button is pressed with the Search dial at the 0 position when the videocassette recorder is in the stop mode, either the still picture on the monitor screen will be unstable or the recorder will re-enter the stop mode. To obtain a still picture from the recorder's stop mode, move the tape by pressing the PLAY button or by turning the Search dial, then stop the tape by pressing the PAUSE button or setting the Search dial to the 0 position.

LOCATION OF PARTS AND CONTROLS

The following explanation can be used as an index, for the pages on which the parts and/or controls are used, are shown in parentheses.

ENTRY button for the recorder
To enter the edit-in and edit-out points for the recorder, use these buttons (page 11).

TRIM buttons
The memorized edit-in and edit-out points can be modified frame by frame with these buttons (page 17).

ENTRY buttons for the player
To enter the edit-in and edit-out points for the player, use these buttons (page 10).

Digital Time Counter
Counts the CTL pulses on the tape and displays the results in hours, minutes, seconds and frames (page 20).

The function of these controls is the same as those on the player.
STOP button
REW (Rewind) button
PLAY button
F FWD (Fast Forward) Button
PAUSE button

SEARCH button (page 20)

Search dial
The playback speed will be changed from slow to still and to high with this dial (page 10).

PREVIEW button
This button is used for editing rehearsal. Picture to be edited can be monitored before actual editing (page 14).

RETURN/JUMP button
During the preview mode, press this button, and the recorder will return to the edit-in point at high speed and the still picture can be monitored (page 14).
During the review mode, press this button, and the edited picture between several seconds prior to the edit-out point and 2 seconds after the edit-out point can be monitored (page 15 and 21).

ASSEMBLE button
Press this button for assembly editing (page 8).

INSERT button
These buttons select the input signal during insert editing (page 8).

The function of these controls is the same as those on the recorder.
REC (Record) button
STOP button
REW (Rewind) button
PLAY button
F FWD (Fast Forward) button
PAUSE button

EDIT button
To do the manual editing, press this button and the PLAY button simultaneously (page 19).
When only this button is pressed, the picture from the player will be monitored on the recorder monitor.

SEARCH button (page 20)

Search dial (page 10)

END button
During the manual editing, press this button, and the editing will be cut out (page 19).
During the preview mode or the automatic editing, press this button, and that point will be the edit-out point (page 13, 16 and 18).

AUTO EDIT button
Press this button to put the recorder in the automatic editing mode (page 12).

REVIEW button
Press the button to review the edited picture (page 15).

TECHNICAL SPECIFICATIONS

According to the videocassette recorder connected to this unit, the function of this unit may be limited.

Automatic controls	PREVIEW, AUTO EDIT (INSERT/ASSEMBLE), RETURN/JUMP, REVIEW, END
Manual controls	Recorder: RECORD/EDIT Player/Recorder: FAST FORWARD, STOP, REWIND, PAUSE, SEARCH (Reverse × 5 to 0 to forward × 5, and picture search or Betascan)
Frame modification	Edit-in and edit-out points, possible on the player and/or recorder separately (impossible in the automatic mode)
Digital time counter	−9 hours 59 min. 59 sec. 29 frames to +9 hours 59 min. 59 sec. 29 frames (indicated on both the player and recorder)

Editing accuracy

	SLO-383	VO-2860 series	VO-5850
editing without previewing	±3 frames	±5 frames	±2 frames
editing with previewing once	±5 frames	±9 frames	

Connectors	PLAYER/RECORDER 33-pin connector
Power requirements	6.8 V dc (supplied from the videocassette recorder)
Power consumption	5 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	approx. 390 × 76.5 × 220 mm (w/h/d) ($15^3/_8 \times 3^1/_8 \times 8^3/_4$ inches)
Weight	approx. 2.2 kg (4 lb 14 oz)
Accessory supplied	Cap 1
Optional accessory	Remote control cable RCC-5F (33-pin to 33-pin, 5 m, 15 feet) Remote control cable RCC-5E (33-pin to 20-pin, 5 m, 15 feet)

Design and specifications subject to change without notice.

TROUBLE CHECKS

Many apparent malfunctions may be caused by a mis-set control that has been overlooked, or some other equally simple cause. Should any difficulty arise in operation, check through this list of symptoms and possible causes. Should the difficulty persist, contact the dealer from whom this unit was purchased, or a local Sony dealer.

Symptom	Check points
No figures or no figures' change on the time counter	● Are the connections made firmly? (Insert the connectors firmly in position.) ● Unless the CTL signal is recorded on the tape, the figure will not change on the counter. ● The counter number for the disconnected player or recorder will not be indicated.
Reverse mode does not function.	● Set the REVERSE switch (on the rear panel) to ON. ● When using a videocassette recorder which has no reverse function, the reverse mode does not function. (Set the REVERSE switch to OFF.)
No PREVIEW, no AUTO EDIT mode even though these buttons are pressed.	● Is there the safety tab on the cassette bottom? (When a Betamax videocassette is used.) ● Is the red button in place? (When a U-matic videocassette is used.) ● Are the connections made firmly? (Insert the connectors firmly in position.) ● Does the tape reach to the end? (Rewind the tape). ● Is the INPUT SELECT switch of the videocassette recorder set correctly? ● When insert editing, press the INSERT button correctly. (Operations are different for a recorder equipped with 33-pin connector and for that equipped with 20-pin connector.) ● When insert editing, record the CTL signal on the tape before editing. ● When assembly editing, record the CTL signal on the first edit-in point. ● Are the IN lamp and OUT lamp blinking alternately? (Re-enter the editing points correctly.) ● When the recorder is in the STOP, F FWD (fast forward) or REW (rewind) mode, PREVIEW and AUTO EDIT buttons do not function even though they are pressed. ● When the player is in the F FWD (fast forward) or REW (rewind) mode, PREVIEW and AUTO EDIT buttons do not function even though they are pressed. ● Is the AUTO OFF lamp of the recorder lighting? (Read the instruction manual supplied with the recorder.)
PREVIEW and AUTO EDIT modes function but the editing points are not correct. (They are different from the entered points.)	● After entry, has not the time counter been reset to "0"? ● After entry, has not the recorder been set in the STOP mode? (If the STOP mode is activated once, the editing points will go wrong.) ● The memorized points and the actual editing points may be different slightly according to the recorder used. (Make fine adjustment with the TRIM button before editing.)
Picture becomes unstable on the position where the editing is performed.	● If the CTL signal breaks on the position, the picture will be unstable. ● If the recording is started by the REC button, the picture will be unstable. (Start recording with the AUTO EDIT or EDIT button.)
Lateral stripes appear on the picture.	● The guard band noise (lateral stripes) which appears on the playback picture except at normal speed is not malfunction.
Playback picture is unstable.	● Does not the external signal applied to the recorder contain noise? (Re-select the position of the INPUT SELECT switch.) ● When insert editing, if the recorded CTL signal is not normal or contains noise, the playback picture will be unstable. ● The picture recorded with the use of the PAUSE button may be unstable. ● If the playback machine is in the Betascan (picture search), variable speed playback or reverse mode, the playback picture of the recording machine may be unstable. (Set the playback machine in the normal playback or STOP mode.)
The picture in the Betascan (picture search) operation is unstable.	● Adjust the vertical and horizontal hold controls on the video monitor.